



#7

1

## SEQUENCE LISTING

<110> Adler, David A.  
Holloway, James L.  
Baindur, Nand  
Beigel-Orme, Stephanie  
Sheppard, Paul O.

<120> NOVEL BETA-DEFENSINS

<130> 97-44D1

<140> US 10/091,166

<141> 2002-03-05

<150> US 09/636,399

<151> 2000-08-10

<150> US 09/344,097

<151> 1999-06-25

<150> US 09/150,786

<151> 1998-09-10

<150> US 60/064,294

<151> 1997-11-05

<150> US 60/058,335

<151> 1997-09-10

<160> 72

<170> FastSEQ for Windows Version 4.0

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<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1)...(195)

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1				5					10					15		

cct	gtt	cca	ggt	cat	gga	gga	atc	ata	aac	aca	tta	cag	aaa	tat	tat	96
Pro	Val	Pro	Gly	His	Gly	Gly	Ile	Ile	Asn	Thr	Leu	Gln	Lys	Tyr	Tyr	
			20					25					30			

tgc	aga	gtc	aga	ggc	ggc	cgg	tgt	gct	gtg	ctc	agc	tgc	ctt	cca	aag	144
Cys	Arg	Val	Arg	Gly	Gly	Arg	Cys	Ala	Val	Leu	Ser	Cys	Leu	Pro	Lys	
		35					40					45				

gag	gaa	cag	atc	ggc	aag	tgc	tcg	acg	cgt	ggc	cga	aaa	tgc	tgc	cga	192
Glu	Glu	Gln	Ile	Gly	Lys	Cys	Ser	Thr	Arg	Gly	Arg	Lys	Cys	Cys	Arg	
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aga	aagaaataaa	aaccctgaaa	catg	219
Arg				
65				

<210> 2

<211> 65

<212> PRT

<213> Homo sapiens

<400> 2

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Met Arg Ile His Tyr Leu Leu Phe Ala Leu Leu Phe Leu Phe Leu Val
 1          5          10          15
Pro Val Pro Gly His Gly Gly Ile Ile Asn Thr Leu Gln Lys Tyr Tyr
          20          25          30
Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys
          35          40          45
Glu Glu Gln Ile Gly Lys Cys Ser Thr Arg Gly Arg Lys Cys Cys Arg
 50          55          60
Arg
65

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<210> 3

<211> 31

<212> PRT

<213> Artificial Sequence

<220>

<221> VARIANT

<222> (2)...(7)

<223> Any amino acid, preferably not cysteine.

<221> VARIANT

<222> (9)...(12)

<223> Any amino acid, preferably not cysteine.

<221> VARIANT

<222> (14)...(20)

<223> Any amino acid, preferably not cysteine.

<221> VARIANT

<222> (22)...(22)

<223> Any amino acid, preferably not cysteine.

<221> VARIANT

<222> (24)...(29)

<223> Any amino acid, preferably not cysteine.

<223> conserved motif

<400> 3

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Cys Xaa Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa
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Xaa Xaa Xaa Xaa Gly Xaa Cys Xaa Xaa Xaa Xaa Xaa Cys Cys
          20          25          30

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<210> 4

<211> 213

<212> DNA

<213> Artificial Sequence

<220>

<223> Degenerate nucleotide encoding the polypeptide of  
SEQ ID NO:2.

<221> misc\_feature

<222> (1)...(213)

<223> n = a, g, c or t

<400> 4

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athcaytay tnynttgyc nytnyntty ynttgytng tncngtncc nggncaygg 60
ggathatha ayacnytnca raartrrrnn tgymngtnm gngngngnm ntgygcngtn 120
ytnwsntgy tncnaarga rgarcarath ggnaartgyw snacnmngg nmgnaartgy 180
tgymngmna araartrraa rcntrraay atg 213

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<210> 5  
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 <223> oligonucleotide ZC14741

<400> 5  
 gagcacttgc cgatctgttc 20

<210> 6  
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 <223> oligonucleotide ZC14740

<400> 6  
 ccaggtcag gaggaatcat 20

<210> 7  
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<220>  
 <223> oligonucleotide ZC14780

<400> 7  
 ggaggaatca taaacaca 18

<210> 8  
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 <213> Artificial Sequence

<220>  
 <223> oligonucleotide ZC14776

<400> 8  
 gccgatctgt tcctcctt 18

<210> 9  
 <211> 438  
 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (220)...(420)

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 tgttctgcat ggtgagaggc attggaatga tgcacagaa aacatgtcat aatgtcatca 120  
 ctgtaatatg acaagaattg cagctgtggc tggaacctt ataaagtgc caagcacacc 180  
 ttttcatcca gtctcagcgt ggggtgaagc ctagcagct atg agg atc cat tat 234  
 Met Arg Ile His Tyr  
 1 5  
 ctt ctg ttt gct ttg ctc ttc ctg ttt ttg gtg cct gtt cca ggt cat 282  
 Leu Leu Phe Ala Leu Leu Phe Leu Phe Leu Val Pro Val Pro Gly His  
 10 15 20  
 gga gga atc ata aac aca tta cag aaa tat tat tgc aga gtc aga ggc 330  
 Gly Gly Ile Ile Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Gly  
 25 30 35

ggc cgg tgt gct gtg ctc agc tgc ctt cca aag gag gaa cag atc ggc 378  
 Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Gly  
                   40                  45                  50

aag tgc tgc acg cgt ggc cga aaa tgc tgc cga aga aag aaa 420  
 Lys Cys Ser Thr Arg Gly Arg Lys Cys Cys Arg Arg Lys Lys  
           55                  60                  65

taaaaaccct gaaacatg 438

<210> 10  
 <211> 67  
 <212> PRT  
 <213> Homo sapiens

<400> 10  
 Met Arg Ile His Tyr Leu Leu Phe Ala Leu Leu Phe Leu Phe Leu Val  
   1                  5                  10                  15  
 Pro Val Pro Gly His Gly Gly Ile Ile Asn Thr Leu Gln Lys Tyr Tyr  
           20                  25                  30  
 Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys  
           35                  40                  45  
 Glu Glu Gln Ile Gly Lys Cys Ser Thr Arg Gly Arg Lys Cys Cys Arg  
   50                  55                  60  
 Arg Lys Lys  
 65

<210> 11  
 <211> 219  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Degenerate nucleotide sequence encoding the  
 polypeptide of SEQ ID NO:10.

<221> misc\_feature  
 <222> (1)...(219)  
 <223> n = a, g, c or t

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 cayggnggna thathaayac nytncaraar trrnnntgym gngtnmgngg nggnmgntgy 120  
 gcngtnytnw sntgyytncc naargargar carathggna artgywsnac nmngnggnmgn 180  
 aartgytgym gnmgnaaraa rtrraarccn trraayatg 219

<210> 12  
 <211> 21  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> oligonucleotide ZC15591

<400> 12  
 tgccgatctg ttcttccttt g 21

<210> 13  
 <211> 25  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> oligonucleotide ZC15589

<400> 13  
 gaacaggcac caaaaacagg aagag 25

<210> 14  
 <211> 37  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<400> 14  
 Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val Leu Ser  
 1 5 10 15  
 Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr Arg  
 20 25 30  
 Lys Cys Cys Arg Arg  
 35

<210> 15  
 <211> 29  
 <212> PRT  
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<220>  
 <223> Defensin polypeptide

<221> VARIANT  
 <222> (26)...(26)  
 <223> leucine, isoleucine, valine, phenylalanine, or  
 methionine

<400> 15  
 Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly  
 1 5 10 15  
 Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys  
 20 25

<210> 16  
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<220>  
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<221> VARIANT  
 <222> (26)...(26)  
 <223> leucine, isoleucine, valine, phenylalanine, or  
 methionine

<400> 16  
 Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly  
 1 5 10 15  
 Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys  
 20 25 30

<210> 17  
 <211> 27  
 <212> PRT  
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<220>  
 <223> Defensin polypeptide

<221> VARIANT  
 <222> (26)...(26)  
 <223> leucine, isoleucine, valine, phenylalanine, or

methionine

&lt;400&gt; 17

Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly  
 1 5 10 15  
 Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg  
 20 25

&lt;210&gt; 18

&lt;211&gt; 38

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Defensin polypeptide

&lt;400&gt; 18

Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val Leu Ser  
 1 5 10 15  
 Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr Arg  
 20 25 30  
 Lys Cys Cys Arg Arg Lys  
 35

&lt;210&gt; 19

&lt;211&gt; 39

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Defensin polypeptide

&lt;400&gt; 19

Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val Leu Ser  
 1 5 10 15  
 Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr Arg  
 20 25 30  
 Lys Cys Cys Arg Arg Lys Lys  
 35

&lt;210&gt; 20

&lt;211&gt; 44

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Defensin polypeptide

&lt;400&gt; 20

Ile Ile Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg  
 1 5 10 15  
 Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys  
 20 25 30  
 Ser Thr Arg Tyr Arg Lys Cys Cys Arg Arg Lys Lys  
 35 40

&lt;210&gt; 21

&lt;211&gt; 43

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Defensin polypeptide

&lt;400&gt; 21

Ile Ile Asn Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg  
 1 5 10 15  
 Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys  
 20 25 30  
 Ser Thr Arg Tyr Arg Lys Cys Cys Arg Arg Lys  
 35 40

<210> 22  
 <211> 42  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<400> 22  
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 1 5 10 15  
 Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys  
 20 25 30  
 Ser Thr Arg Tyr Arg Lys Cys Cys Arg Arg  
 35 40

<210> 23  
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 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<400> 23  
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 Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser  
 20 25 30  
 Thr Arg Tyr Arg Lys Cys Cys Arg Arg Lys Lys  
 35 40

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 20 25 30  
 Thr Arg Tyr Arg Lys Cys Cys Arg Arg Lys  
 35 40

<210> 25  
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 <212> PRT  
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<220>  
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<400> 25  
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Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg  
 20 25 30  
 Tyr Arg Lys Cys Cys Arg Arg Lys Lys  
 35 40

<210> 30  
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 <212> PRT  
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<220>  
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<400> 30  
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 1 5 10 15  
 Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg  
 20 25 30  
 Tyr Arg Lys Cys Cys Arg Arg Lys  
 35 40

<210> 31  
 <211> 39  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<400> 31  
 Thr Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val  
 1 5 10 15  
 Leu Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg  
 20 25 30  
 Tyr Arg Lys Cys Cys Arg Arg  
 35

<210> 32  
 <211> 40  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<400> 32  
 Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val Leu  
 1 5 10 15  
 Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr  
 20 25 30  
 Arg Lys Cys Cys Arg Arg Lys Lys  
 35 40

<210> 33  
 <211> 39  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<400> 33  
 Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val Leu  
 1 5 10 15  
 Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr

Arg Lys Cys 20 25 10 30  
 35 Cys Arg Arg Lys

<210> 34  
 <211> 38  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<400> 34  
 Leu Gln Lys Tyr Tyr Cys Arg Val Arg Tyr Tyr Arg Cys Ala Val Leu  
 1 5 10 15  
 Ser Cys Leu Pro Lys Glu Glu Gln Ile Tyr Lys Cys Ser Thr Arg Tyr  
 20 25 30  
 Arg Lys Cys Cys Arg Arg  
 35

<210> 35  
 <211> 49  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<221> VARIANT  
 <222> (45)...(45)  
 <223> leucine, isoleucine, valine, phenylalanine, or  
 methionine

<400> 35  
 Pro Gly His Gly Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg  
 1 5 10 15  
 Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu  
 20 25 30  
 Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys  
 35 40 45  
 Lys

<210> 36  
 <211> 48  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<221> VARIANT  
 <222> (45)...(45)  
 <223> leucine, isoleucine, valine, phenylalanine, or  
 methionine

<400> 36  
 Pro Gly His Gly Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg  
 1 5 10 15  
 Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu  
 20 25 30  
 Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys  
 35 40 45

<210> 37

<211> 48  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<221> VARIANT  
 <222> (44)...(44)  
 <223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 37  
 Gly His Gly Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val  
 1 5 10 15  
 Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys  
 20 25 30  
 Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys  
 35 40 45

<210> 38  
 <211> 47  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<221> VARIANT  
 <222> (44)...(44)  
 <223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 38  
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 1 5 10 15  
 Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys  
 20 25 30  
 Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys  
 35 40 45

<210> 39  
 <211> 47  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<221> VARIANT  
 <222> (43)...(43)  
 <223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 39  
 His Gly Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg  
 1 5 10 15  
 Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile  
 20 25 30  
 Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys  
 35 40 45

<210> 40  
 <211> 46  
 <212> PRT  
 <213> Artificial Sequence

&lt;220&gt;

&lt;223&gt; Defensin polypeptide

&lt;221&gt; VARIANT

&lt;222&gt; (43)...(43)

&lt;223&gt; leucine, isoleucine, valine, phenylalanine, or methionine

&lt;400&gt; 40

His	Gly	Gly	Ile	Ile	Asn	Thr	Leu	Gln	Leu	Tyr	Tyr	Cys	Arg	Val	Arg
1				5					10					15	
Gly	Gly	Arg	Cys	Ala	Val	Leu	Ser	Cys	Leu	Pro	Lys	Glu	Glu	Cys	Ile
		20						25					30		
Gly	Lys	Met	Ser	Thr	Arg	Gly	Arg	Lys	Cys	Xaa	Arg	Arg	Lys		
	35					40						45			

&lt;210&gt; 41

&lt;211&gt; 46

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Defensin polypeptide

&lt;221&gt; VARIANT

&lt;222&gt; (42)...(42)

&lt;223&gt; leucine, isoleucine, valine, phenylalanine, or methionine

&lt;400&gt; 41

Gly	Gly	Ile	Ile	Asn	Thr	Leu	Gln	Leu	Tyr	Tyr	Cys	Arg	Val	Arg	Gly
1				5				10						15	
Gly	Arg	Cys	Ala	Val	Leu	Ser	Cys	Leu	Pro	Lys	Glu	Glu	Cys	Ile	Gly
		20						25					30		
Lys	Met	Ser	Thr	Arg	Gly	Arg	Lys	Cys	Xaa	Arg	Arg	Lys	Lys		
	35					40						45			

&lt;210&gt; 42

&lt;211&gt; 45

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Defensin polypeptide

&lt;221&gt; VARIANT

&lt;222&gt; (42)...(42)

&lt;223&gt; leucine, isoleucine, valine, phenylalanine, or methionine

&lt;400&gt; 42

Gly	Gly	Ile	Ile	Asn	Thr	Leu	Gln	Leu	Tyr	Tyr	Cys	Arg	Val	Arg	Gly
1				5				10						15	
Gly	Arg	Cys	Ala	Val	Leu	Ser	Cys	Leu	Pro	Lys	Glu	Glu	Cys	Ile	Gly
		20						25					30		
Lys	Met	Ser	Thr	Arg	Gly	Arg	Lys	Cys	Xaa	Arg	Arg	Lys			
	35					40						45			

&lt;210&gt; 43

&lt;211&gt; 45

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Defensin polypeptide

<221> VARIANT  
 <222> (41)...(41)  
 <223> leucine, isoleucine, valine, phenylalanine, or  
 methionine

<400> 43  
 Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly  
 1 5 10 15  
 Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys  
 20 25 30  
 Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys  
 35 40 45

<210> 44  
 <211> 44  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<221> VARIANT  
 <222> (41)...(41)  
 <223> leucine, isoleucine, valine, phenylalanine, or  
 methionine

<400> 44  
 Gly Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly  
 1 5 10 15  
 Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys  
 20 25 30  
 Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys  
 35 40

<210> 45  
 <211> 44  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<221> VARIANT  
 <222> (40)...(40)  
 <223> leucine, isoleucine, valine, phenylalanine, or  
 methionine

<400> 45  
 Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg  
 1 5 10 15  
 Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met  
 20 25 30  
 Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys  
 35 40

<210> 46  
 <211> 43  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<221> VARIANT  
 <222> (40)...(40)

14  
<223> leucine, isoleucine, valine, phenylalanine, or  
methionine

<400> 46  
Ile Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg  
1 5 10 15  
Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met  
20 25 30  
Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys  
35 40

<210> 47  
<211> 43  
<212> PRT  
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<220>  
<223> Defensin polypeptide

<221> VARIANT  
<222> (39)...(39)  
<223> leucine, isoleucine, valine, phenylalanine, or  
methionine

<400> 47  
Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys  
1 5 10 15  
Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser  
20 25 30  
Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys  
35 40

<210> 48  
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<212> PRT  
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<220>  
<223> Defensin polypeptide

<221> VARIANT  
<222> (39)...(39)  
<223> leucine, isoleucine, valine, phenylalanine, or  
methionine

<400> 48  
Ile Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys  
1 5 10 15  
Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser  
20 25 30  
Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys  
35 40

<210> 49  
<211> 42  
<212> PRT  
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<220>  
<223> Defensin polypeptide

<221> VARIANT  
<222> (38)...(38)  
<223> leucine, isoleucine, valine, phenylalanine, or  
methionine

&lt;400&gt; 49

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Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala
 1      5      10      15
Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr
      20      25      30
Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys
      35      40

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&lt;210&gt; 50

&lt;211&gt; 41

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Defensin polypeptide

&lt;221&gt; VARIANT

&lt;222&gt; (38)...(38)

&lt;223&gt; leucine, isoleucine, valine, phenylalanine, or methionine

&lt;400&gt; 50

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Asn Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala
 1      5      10      15
Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr
      20      25      30
Arg Gly Arg Lys Cys Xaa Arg Arg Lys
      35      40

```

&lt;210&gt; 51

&lt;211&gt; 41

&lt;212&gt; PRT

&lt;213&gt; Artificial sequence

&lt;220&gt;

&lt;223&gt; Defensin polypeptide

&lt;221&gt; VARIANT

&lt;222&gt; (37)...(37)

&lt;223&gt; leucine, isoleucine, valine, phenylalanine, or methionine

&lt;400&gt; 51

```

Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val
 1      5      10      15
Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg
      20      25      30
Gly Arg Lys Cys Xaa Arg Arg Lys Lys
      35      40

```

&lt;210&gt; 52

&lt;211&gt; 40

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Defensin polypeptide

&lt;221&gt; VARIANT

&lt;222&gt; (37)...(37)

&lt;223&gt; leucine, isoleucine, valine, phenylalanine, or methionine

&lt;400&gt; 52

```

Thr Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val
 1      5      10      15

```

Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg  
 20 25 30  
 Gly Arg Lys Cys Xaa Arg Arg Lys  
 35 40

<210> 53  
 <211> 40  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<221> VARIANT  
 <222> (36)...(36)  
 <223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 53  
 Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu  
 1 5 10 15  
 Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly  
 20 25 30  
 Arg Lys Cys Xaa Arg Arg Lys Lys  
 35 40

<210> 54  
 <211> 39  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<221> VARIANT  
 <222> (36)...(36)  
 <223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 54  
 Leu Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu  
 1 5 10 15  
 Ser Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly  
 20 25 30  
 Arg Lys Cys Xaa Arg Arg Lys  
 35

<210> 55  
 <211> 39  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<221> VARIANT  
 <222> (35)...(35)  
 <223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 55  
 Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser  
 1 5 10 15  
 Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg  
 20 25 30  
 Lys Cys Xaa Arg Arg Lys Lys



<210> 56  
 <211> 38  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<221> VARIANT  
 <222> (35)...(35)  
 <223> leucine, isoleucine, valine, phenylalanine, or  
 methionine

<400> 56  
 Gln Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser  
 1 5 10 15  
 Cys Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg  
 20 25 30  
 Lys Cys Xaa Arg Arg Lys  
 35

<210> 57  
 <211> 38  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<221> VARIANT  
 <222> (34)...(34)  
 <223> leucine, isoleucine, valine, phenylalanine, or  
 methionine

<400> 57  
 Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys  
 1 5 10 15  
 Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys  
 20 25 30  
 Cys Xaa Arg Arg Lys Lys  
 35

<210> 58  
 <211> 37  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<221> VARIANT  
 <222> (34)...(34)  
 <223> leucine, isoleucine, valine, phenylalanine, or  
 methionine

<400> 58  
 Leu Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys  
 1 5 10 15  
 Leu Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys  
 20 25 30  
 Cys Xaa Arg Arg Lys  
 35

<210> 59  
 <211> 37  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<221> VARIANT  
 <222> (33)...(33)  
 <223> leucine, isoleucine, valine, phenylalanine, or  
 methionine

<400> 59  
 Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu  
 1 5 10 15  
 Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys  
 20 25 30  
 Xaa Arg Arg Lys Lys  
 35

<210> 60  
 <211> 36  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<221> VARIANT  
 <222> (33)...(33)  
 <223> leucine, isoleucine, valine, phenylalanine, or  
 methionine

<400> 60  
 Tyr Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu  
 1 5 10 15  
 Pro Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys  
 20 25 30  
 Xaa Arg Arg Lys  
 35

<210> 61  
 <211> 36  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<221> VARIANT  
 <222> (32)...(32)  
 <223> leucine, isoleucine, valine, phenylalanine, or  
 methionine

<400> 61  
 Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro  
 1 5 10 15  
 Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa  
 20 25 30  
 Arg Arg Lys Lys  
 35

<210> 62  
 <211> 35  
 <212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (32)...(32)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 62

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Tyr Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro
 1          5          10          15
Lys Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa
          20          25          30
Arg Arg Lys
          35

```

<210> 63

<211> 35

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (31)...(31)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 63

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Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys
 1          5          10          15
Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg
          20          25          30
Arg Lys Lys
          35

```

<210> 64

<211> 34

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (31)...(31)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 64

```

Cys Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys
 1          5          10          15
Glu Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg
          20          25          30
Arg Lys

```

<210> 65

<211> 34

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (30)...(30)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 65

```

Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu
 1      5      10      15
Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg
      20      25      30
Lys Lys

```

<210> 66

<211> 33

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (30)...(30)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 66

```

Arg Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu
 1      5      10      15
Glu Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg
      20      25      30
Lys

```

<210> 67

<211> 33

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (29)...(29)

<223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 67

```

Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu
 1      5      10      15
Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys
      20      25      30
Lys

```

<210> 68

<211> 32

<212> PRT

<213> Artificial Sequence

<220>

<223> Defensin polypeptide

<221> VARIANT

<222> (29)...(29)  
 <223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 68  
 Val Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu  
 1 5 10 15  
 Cys Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys  
 20 25 30

<210> 69  
 <211> 32  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<221> VARIANT  
 <222> (28)...(28)  
 <223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 69  
 Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys  
 1 5 10 15  
 Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys  
 20 25 30

<210> 70  
 <211> 31  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<221> VARIANT  
 <222> (28)...(28)  
 <223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 70  
 Arg Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys  
 1 5 10 15  
 Ile Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys  
 20 25 30

<210> 71  
 <211> 31  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<221> VARIANT  
 <222> (27)...(27)  
 <223> leucine, isoleucine, valine, phenylalanine, or methionine

<400> 71  
 Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile  
 1 5 10 15  
 Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys Lys  
 20 25 30

<210> 72  
 <211> 30  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Defensin polypeptide

<221> VARIANT  
 <222> (27)...(27)  
 <223> leucine, isoleucine, valine, phenylalanine, or  
 methionine

<400> 72  
 Gly Gly Arg Cys Ala Val Leu Ser Cys Leu Pro Lys Glu Glu Cys Ile  
 1 5 10 15  
 Gly Lys Met Ser Thr Arg Gly Arg Lys Cys Xaa Arg Arg Lys  
 20 25 30